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Ethnicity and Sound Change in San Francisco English

LAUREN HALL-LEW
Stanford University

1. Introduction

An increasing number of studies in sociolinguistics are focusing on the intersection of regional dialect variation and ethnicity. Much of this research is in response to the claim in Labov (2001) that non-white ethnic groups will not participate in local sound change:

All speakers who are socially defined as white, mainstream, or Euro-American, are involved in the [sound] changes to one degree or another ... But for those children who are integral members of a sub-community that American society defines as "non-white" – Black, Hispanic, or native [sic] American – the result is quite different. No matter how frequently they are exposed to the local vernacular, the new speech patterns of regional sound change do not surface in their speech. (2001:506)

Since the publication of this claim, much of the current research on sociophonetics and ethnicity has considered its validity. With a few exceptions (*e.g.*, Anderson 1997), most of the relevant studies have focused on varieties of African American English (*e.g.*, Thomas 1989, Anderson 2002, Fridland 2003, Eberhart 2008, among others). With regard to Asian American English, Labov (2001) calls this an "open question" but suggests that Asian Americans in Philadelphia are not participating in local sound change. Wong (2007) found that Chinese Americans in New York City maintain a low back vowel distinction but do not acquire the local split short-a system. Wong also found that the two speakers whose social networks and lifestyle choices were more Chinese-dominant were less likely adopt the New York City vowel features.

There are relatively few studies on Asian American English at all, and there have been no large-scale sociophonetic community studies of Asian Americans prior to the present analysis. This paper considers vocalic sound changes in progress in the speech of the residents of one Northern Californian urban neigh-

borhood, San Francisco's Sunset District, and argues that the Asian American presence is so integral to the community under study that there is no useful distinction between an 'ethnolect' and a 'regional dialect' (*cf* Eckert 2008).

2. The Neighborhood

The Sunset District is the largest residential neighborhood in San Francisco. It sits away from downtown, in the Western part of the city, bordering the Pacific Ocean. "The Sunset" has a population of 98,450 residents, less than half (43%) identifying as White and more than half (52%) identifying as Asian, with most of those Asians (77%) identifying as Chinese (Census 2000). This demographic distribution makes the Sunset District a particularly apt location for an analysis of the production of sound change by Asian Americans. Furthermore, demographic change in terms of population ethnicity has come to the neighborhood relatively recently, a fact which is very salient to the community's residents and their discursive construction of local meaning.

When San Francisco joined the United States in 1848, the area of today's Sunset District was covered in sand dunes and thought to be uninhabitable. This, in addition to its Western-most location, meant that early Sunset residents had a sense of being a pioneer. This history may ground the strong neighborhood pride evidenced in current local discourse. Adding to this pioneering pride is the manner in which the neighborhood developed, through the rapid construction of affordable single-family homes. In contrast to Eastern neighborhoods, a portion of the Sunset's population has been made up of native San Franciscans moving out of apartments in the more congested areas of the city. Being a neighborhood of 2nd generation San Franciscans may also contribute to neighborhood pride and specifically to an ideology of local authenticity.

People moved into the Sunset District in two general waves. The first was predominantly Irish, and the second Chinese. Working class Irish American identity created a backdrop for the Chinese American presence today; Irish history is still a strong part of local discourse, while Chinese ethnicity has become key to local definitions of place (*e.g.*, many residents consider the Sunset to be a "new Chinatown"). This local history has created a social landscape where pride in ethnic identities may be understood as pride in the neighborhood, shaping how regional dialects become employed and interpreted in this multiethnic community.

3. Fieldwork & Social Variables

Data come from fieldwork conducted from January to June 2008, consisting of sociolinguistic interviews and participant observation. The majority of the speakers in this study were contacted through friends-of-friends and advertisement in the neighborhood community center newsletter. Most of the 88 interviews were one-on-one and lasted from 45 to 120 minutes. Interviews were either recorded in the speaker's home or office, or in a quiet office space I rented in the neighborhood. During my fieldwork, I participated in neighborhood activities and spent time with locals in public libraries, parks, and other recreational areas.

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All the speakers are at least 2nd generation San Franciscan, have lived in the Sunset District since at least age 5, and have spoken English as their primary language since at least age 5. Some participants over the age of 60 also include speakers who either lived in another San Francisco neighborhood since birth and in the Sunset for several decades and at the time of the interview, or who had grown up in the Sunset and now live elsewhere in the San Francisco Bay Area.

The phonetic analysis presented here consists of interview data from 23 of the 88 Sunset residents interviewed. Those 23 speakers were selected to satisfy demographic representation for the social variables: age, sex, and ethnicity.

Table 1: Speaker Sample

Age Group	Asian Americans	European Americans
Teens & 20s	4 F, 2 M	2 F, 2 M
30s & 40s	2 F, 2 M	2 F, 2 M
60s & 70s	2 F, 1 M	1 F, 1 M

Table 1 shows speakers divided according to the broad ethnic categories of Asian American and European American. The term *Asian American* was initially a political activist term of reference, created in the late 1960s and gaining currency in the 1980s as a term uniting Americans of various Asian backgrounds around common interests (*cf* Espiritu 1992). Not coincidentally, this nationally recognized term was first coined at San Francisco State University, which sits directly south of the Sunset District and has been a common destination for Sunset District residents for many decades. Also, since the majority of the Asian Americans in the Sunset District are of Chinese descent, many Sunset residents use the terms *Asian (American)* and *Chinese (American)* interchangeably. However, ‘Asianness’ in the Sunset is certainly influenced by the presence of the 33% non-Chinese Asian heritage cultures, namely Japanese, Korean, Vietnamese, and Filipino. These distributional facts are represented in my overall sample of 88 speakers, though the subset of 23 speakers analyzed phonetically includes only 13 Asian Americans: 12 of Chinese descent and one of Japanese descent.

4. Linguistic Variables

The linguistic variables analyzed here are the merger of the low back vowels, as in *cot* and *caught*, and the fronting of the nuclei of the mid- and high back vowels, (o^w) and (u^w), as in *boat* and *boot*, respectively. All are known features of the Western U.S. English, specifically the Northern California Vowel Shift (Eckert 2008).

Tokens of the vowels /i/, (a)¹, (ɔ), (o^w), and (u^w) were collected for all 23 speakers. All vowel tokens had a minimum duration of 60 milliseconds, to avoid attributing rate of speech reduction effects to social factors or sound change. LPC measurements of F1 and F2 only were taken at the midpoint of the nucleus or steady-state of the vowel as well as the end of the off-glide (approximately three glottal pulses from the end of voicing). Measurements were made using automatic extraction by *Akustyk* (Plichta 2006). Approximately 10% of each token set for each vowel for each speaker was checked for accuracy by manual LPC. In order to maintain a representative sample of vowel tokens, each vowel class set contains a minimum of five tokens per vowel class, known conditioning environment, and speaker. A maximum of five tokens per any given lexical item per speaker helps avoid lexical bias effects. All vowels preceding liquids were excluded (for the low back vowels) or labeled separately (for (o^w) and (u^w) before /l/; all were excluded before /r/) because of known phonological conditioning effects. All data was normalized for vocal tract size using the Lobanov speaker-extrinsic algorithm available through the online vowel normalization suite *Norm* (Thomas and Kendall 2007). The complete dataset over all 23 speakers and 5 vowel classes includes about 2300 vowel tokens.

4.1. Low Back Merger

The low back merger involves the backing and raising of (a), as in *cot*, and the fronting, lowering, unrounding, and/or monophthongization of (ɔ), as in *caught*, such that speakers' productions at least approach overlap in vowel space and are confusable in perception. This is a very widespread sound change, and has been analyzed extensively in dialectology (*cf* Kurath and McDavid 1961, Labov *et al.* 2006). The Western U.S. is considered a region of merger (*cf* Labov 1998, Labov *et al.* 2006). The Atlas of North American English (Labov, Ash, and Boberg 2006) finds little production of a low back vowel distinction in the Western U.S., with the sole exception of San Francisco. In San Francisco, the merger is characterized as more transitional than complete. The status of low back merger in San Francisco is an important question for contextualizing San Francisco in relation to the rest of the Western United States.

DeCamp (1953/1971:556) first documented the beginning of the merger in San Francisco, stating, "It is possible ... that this coalescence is beginning in San Francisco. ... The entire subject needs further investigation." Moonwomon (1992:119) concluded that the merger was well advanced in San Francisco, with all of the ten younger speakers in her study showing complete or almost complete overlap (1992:203). The present analysis measures production of the low back vowel merger 17 years after Moonwomon's conclusion that the merger was approaching completion. If the merger is a well-advanced sound change, then the

¹ In this paper I will follow the convention of putting non-variable phonemes in slashes and sociolinguistic variables in parentheses.

extent of merger is expected to negatively correlate with age, with only the oldest speakers maintaining a distinction, if at all.

In the present analysis, extent of merger for each speaker was calculated based on the distance in F2 between normalized speaker averages of the two low back vowel classes, (a) and (ɔ). A Spearman's correlation test across the entire dataset found a significant correlation between a speaker's average F2 distance between vowel classes and speaker age ($p < 0.02$). No significant correlation was found with F1 distance ($p = 0.2$) or Euclidean distance ($p = 0.085$), though the latter, which is the diagonal distance between the two vowel class and incorporates both F1 and F2, approached significance. While the present paper relies on F2 values as the measure of low back vowel measure, subsequent analyses will consider alternate statistical methods and normalization methods to ensure the most accurate representation of these data.

4.2. Back Vowel Fronting

The fronting of the mid- and high back vowels, (o^w) and (u^w), is widespread across North American English; there may be more regions that exhibit back vowel fronting than regions that do not. However, (o^w) and (u^w) fronting have long been particularly salient aspects of the California English vowel system since the 1980s (Hinton *et al.* 1986, Luthin 1987, Hagiwara 1997). Based on this evidence, fronting is expected to be a well advanced change, so we again expect to see that change reflected in apparent time, with fronting negatively correlating with age such that younger speakers front more than older speakers.

As in other analyses, tokens of (u^w) in this study were separated according to whether they followed alveolar consonants (Tu^w) or not (Ku^w), since preceding alveolar consonants are known to strongly condition fronting (Stevens and House 1963; Ash 1996). In addition, (o^w) has been found to resist fronting when followed by a nasal consonant (Luthin 1987), so pre-nasal (o^w) tokens, such as *home*, were excluded here. Lastly, all back vowels are known to resist fronting when followed by /l/, as in *cool* and *coal*, so these occurrences were coded separately.

Based on this known phonological conditioning, fronting was calculated based on distance in normalized F2 space between a speaker's /i/ average and a speaker's pre-/l/ average. For example, a token of (u^w) that is considered '100% fronted' is a token that overlaps in F2 space with the speaker's average /i/ (as in *beet*); an (u^w) token that is '0% fronted' is a token that overlaps in F2 space with the speaker's average (u^w) before /l/, or (u^wl). This yields the percentage of the distance of a speaker's F2 space that each particular (u^w) or (o^w) token is fronted. The equation is given in (3) for post-alveolar (u^w), and the same equation applies to 'elsewhere (u^w)' and (o^w), with (o^w) before /l/, or (o^wl) substituted for (u^wl) in (o^w) calculations.

Equation 1: Frontedness of a post-alveolar (u^w) token:

$$[(Tu^w)_{\text{token}} - (u^wl)_{\text{avg}}] / [i/_{\text{avg}} - (u^wl)_{\text{avg}}]$$

For this analysis, calculations don't indicate the extent of unrounding, which often accompanies fronting. The position of the off-glide is also not explicitly analyzed, since all off-glides appear unsurprisingly to be more rounded than their nuclei and produced further back than their nuclei.

5. Results & Analysis

5.1. Low Back Merger

Figure 1 shows age of speaker plotted against the Lobanov-normalized log-odds values for average F2 difference: the top of the scale represents the greatest distance in F2 space (*i.e.*, the greatest amount of distinction), while the origin represents no distance (*i.e.*, complete merger). The few speakers whose *caught* class average was actually lower and further front than their *cot* class average were given a score of zero, or complete merger.

Figure 1: Low Back Merger Data by Age and Sex

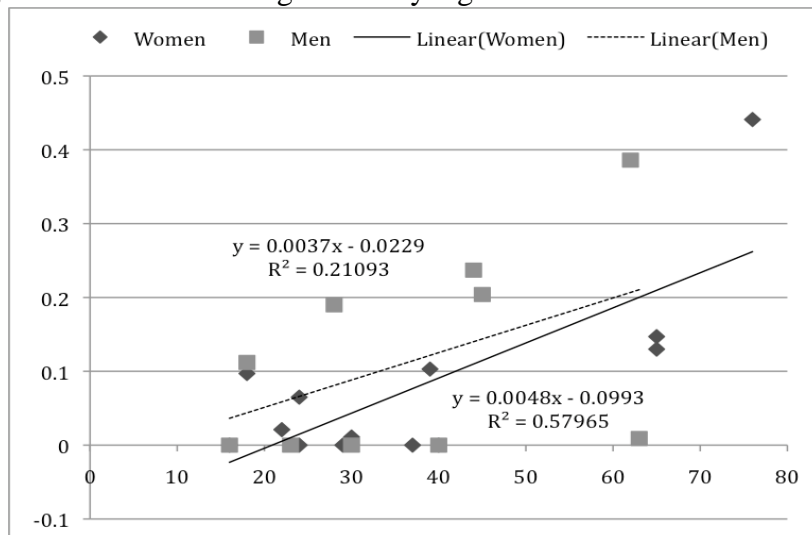
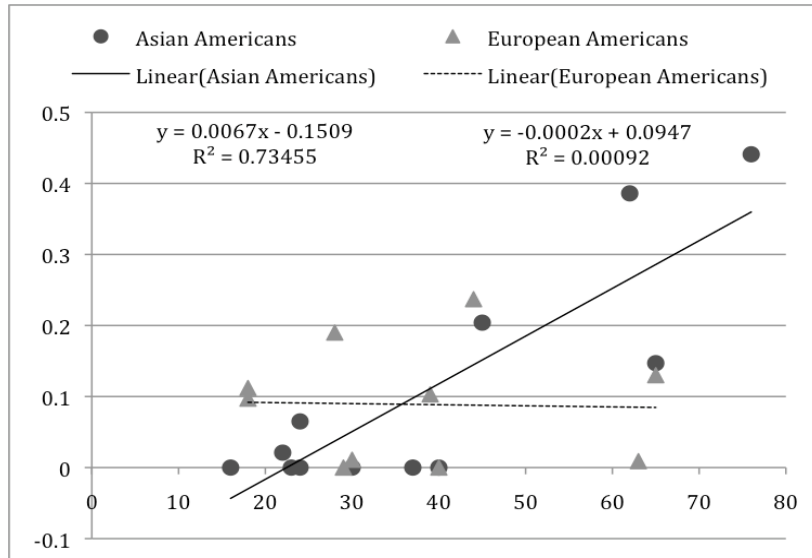


Figure 2: Low Back Merger Data by Age and Ethnicity

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The results show an expected negative correlation between age of speaker and extent of low back merger ($p < 0.02$). In addition, there is no significant gender difference in the realization of low back vowel merger. The most surprising result from these data is that so many speakers, particularly younger speakers, have any low back vowel distinction at all. While a speaker in their 60s may be completely merged, a 28-year-old may be producing distinct *cot* and *caught* vowel classes.

Figure 2 presents the same data but by ethnicity, showing a clear difference within ethnicity according to age. European Americans show no correlation between merger and age, indicating no change in apparent time – they appear variably stable, with some speakers producing distinct vowel classes regardless of age. The apparent time correlation is only evidenced for the Asian Americans, where it is highly significant ($p < 0.01$).

The results show that some San Franciscan Sunset District residents still maintain a low back vowel distinction, regardless of age, gender. While there is no statistical difference overall between Asian Americans and European American, a view in apparent time shows that movement towards merger is an active change-in-progress among Asian Americans, but appears to be stabilized for European Americans. This could indicate a surprisingly stabilized low back distinction in among European American San Franciscans despite the move of the rest of the West and the local Asian American community towards completed merger. Such a scenario contrasts with Moonwomon's (1992) argument that the merger was well on its way to completion. Furthermore, contra Labov (2001), *White speakers appear to be more resistant to regional sound change than are non-Whites, at least in terms of this variable, in this particular community.*

5.2. (o^w) Fronting

Figure 3: (o^w) Fronting Data by Age and Ethnicity

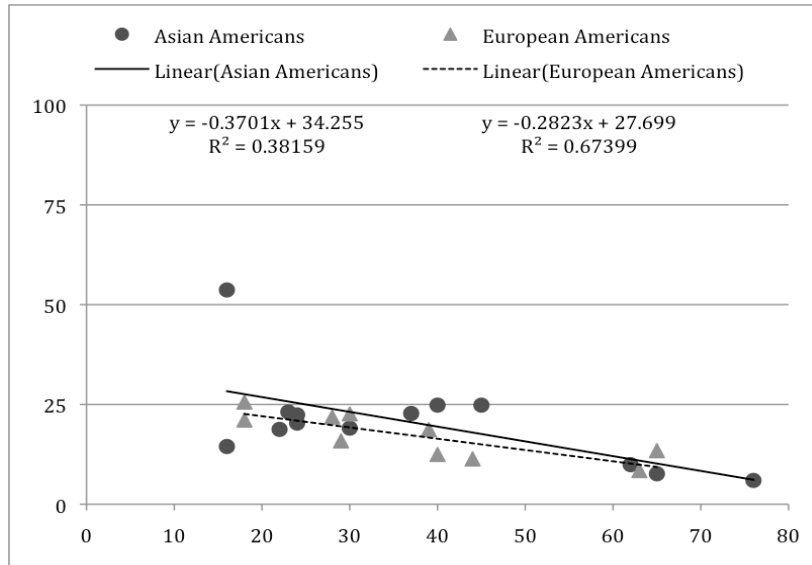


Figure 3 presents speaker age and ethnicity against each speaker's average fronting percentage, in F2 distance, with higher values indicating further fronting. Overall, the fronting of (o^w) is not extremely advanced for these speakers. Age is a significant predictor of fronting ($p < 0.01$), with younger speakers overall fronting further than older speakers. Under the apparent time hypothesis, these results support earlier studies of (o^w) in San Francisco (Hinton *et al.*, 1986; Luthin 1987) in arguing that (o^w)-fronting is a change in progress. However, given the real time comparison with Luthin (1987), one might expect absolute values to be further fronted than they are, suggesting that the adoption of this change may be occurring at a relatively slow pace. Lastly, despite the frequent observation that females lead males in sound change, as well as Labov's (2001) claim that non-white ethnic groups resist local sound change, speaker gender and ethnicity are not significant factors in the fronting of (o^w).

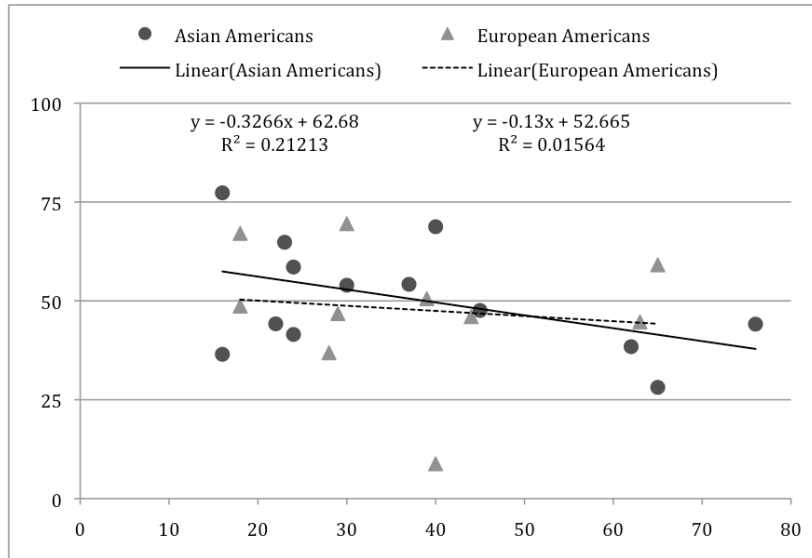
5.3. (u^w) Fronting

Since preceding alveolar consonants so strongly favor the fronting of (u^w), post-alveolar production (Tu^w) is analyzed separately from production in all other phonological environments (Ku^w). Results for post-alveolar production are shown in Figure 4 and elsewhere environments in Figure 5.

All productions of (u^w) are generally known to front further than (o^w) in U.S. English, in contexts where the two vowels are fronting in parallel. This pattern is borne out in these data as well, with post-alveolar (u^w) overall fronting much further in F2 space than (o^w), in many cases past the middle of the speaker's vowel space. The predictions that post-alveolar (u^w) fronting leads elsewhere environments is also borne out.

Figure 4: (Tu^w) Fronting Data by Age and Ethnicity

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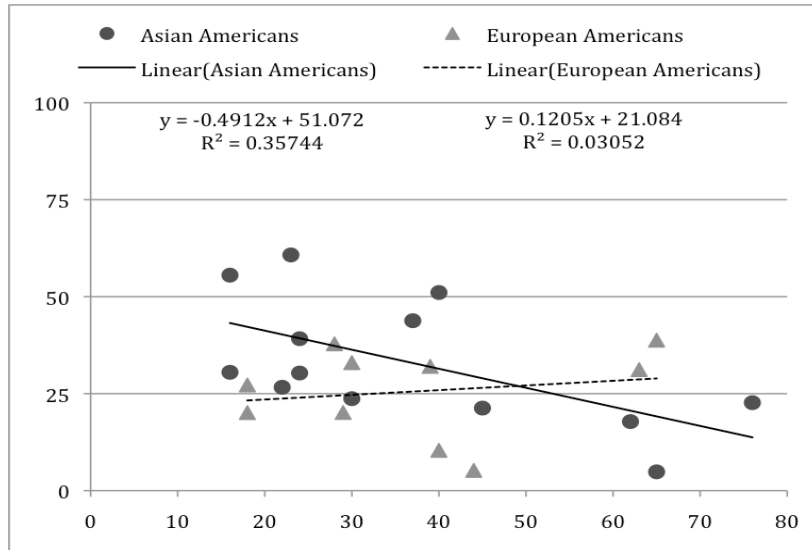


Unlike (o^w), neither case of (u^w)-fronting is significantly correlated with age: across the complete speaker set, there is no evidence of change in apparent time. In comparison to findings from Hinton *et al.* (1987) that found that (u^w) fronting was a change in progress in San Francisco, (u^w) fronting in the Sunset District overall has either slowed or stopped at a point of completion. However, while there is no significant difference between Asian Americans and European Americans for (u^w)-fronting, among the Asian Americans, there is a trend for fronting and age of speaker ($p < 0.07$), suggesting a change in apparent time among Asian Americans. In some ways, this pattern of stability among the European Americans and change in progress for the Asian Americans is similar to the findings for the low back vowel merger.

As was shown for (o^w), differences between men and women are again not significant for (u^w) production, although among post-alveolar productions there is a trend ($p < 0.09$) of with women fronting more than men.

The fact that the position of (u^w) is phonetically conditioned, with preceding alveolar consonants promoting fronted productions, and vowels in other phonological contexts held further back, might suggest that (u^w) fronting is a change in progress. But the age data suggest otherwise. The picture in terms of apparent time seems to be that the (u^w)-fronting sound change is at the point of completion, at least for residents of San Francisco's Sunset District.

Figure 5: (Ku^w) Fronting Data by Age and Ethnicity



In summary, (o^w)-fronting is stratified for age and appears to still be a change in progress, whereas (u^w)-fronting appears to have stabilized at a phonologically conditioned fronted position. Neither change shows a significant distribution according to either speaker ethnicity or speaker gender, but suggestive variability along these dimensions does imply that mid- and high back vowel production may still be quite variable at the level of the broader community.

5.4. Discussion

The results show that the low back vowel classes remain distinct in the speech of all San Franciscans. As suggested by Labov, Ash and Boberg (2006), San Francisco indeed appears to be a linguistic outlier in the Western U.S., at least for this variable. In terms of ethnicity, Asian Americans exhibit a change in progress in apparent time towards merger, while European Americans exhibit stable variation with some speakers maintaining a distinction, regardless of their age.

The results for the mid- and high back vowels show a relatively stable distribution of fronted production, with surprisingly slow change in progress toward further fronting, and no significant differences according to speaker sex or ethnicity. Despite the comparatively slow or stagnant rate of change, the results for ethnicity parallel those of Hinton, *et al.* (1986) and Luthin (1987), who also found no significant differences in vowel fronting between their majority White participants and their (few) Asian American participants.

The predictions set forth by Labov (2001) state very generally that speakers of non-Whites ethnicities avoid the adoption of local sound changes. For the low back vowels, the European Americans are the ones who appear to be resisting broader local sound change. However, for the mid- and high back vowels, the lack of ethnic difference may lead to the popular impression that Asian Americans are linguistically ‘White’ (*cf* Mendoza-Denton & Iwai, 1995).

In contrast, I suggest that there is no social, historical, or ethnographic basis for White speech patterns to be the linguistic target for Sunset District residents. Ethnographic analysis, along with my concurrent work on the vocalization of coda-/l/ among these same speakers, argues that Asian American speech patterns may be acquiring prestige in the neighborhood. Models equating regional sound change with European American speech patterns cannot apply in communities like the Sunset District. Increasing signs of globalization and ethnic diversity in the United States suggest that the speech target for linguistic change will often not be a European American way of speaking.

6. Conclusion

Fought (2006) and Eckert (2008) have argued that the relationship between sound change and ethnicity is not adequately represented by perspectives such as that put forth in Labov (2001). Patterns in phonetic variation in multiethnic contexts are not just indicative of the avoidance or adoption of change. The analysis of ethnicity and sound change cannot be reduced to ethnic categories as large as 'White' versus 'non-White'. Sometimes members of non-White groups avoid sound change, but sometimes they may be the leaders of sound change. Individuals within a group are likely to participate to varying degrees, for various reasons.

Who leads and adopts linguistic change in a given community must be determined with respect to that community, through a combination of empirical and ethnographic analysis. Attention to local meaning is necessary for the advancement of theories of ethnicity and change in progress in sociolinguistics. The present study suggests that variation within Whites cannot be the assumed target of change, particularly in communities where non-White groups have acquired local prestige. As Eckert argues for the use of the California Vowel Shift among Whites and Chicanos, "one can view aspects of this shift as being propelled by identity work within and across both communities ... constructed not simply in opposition to each other, but in conjunction with each other as well" (2008:41).

In the Sunset District, Asian American cultural practices have come to define the community. Chinese identities, in particular, construct the space of social meaning in the neighborhood. Regional sound changes cannot be seen as primarily White, but must be seen in relation to Asian American ethnicity. The Sunset District is just one example of how regional variation is inextricably tied to cultural variation, and how sociolinguistic analyses of regional variation must account for social circumstances at the local level.

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Department of Linguistics, Bldg. 460
Stanford University
Stanford, CA 94305-2150

dialect@stanford.edu